

Author's version

Balaban C. (2020) Diversifying the missions and expectations of doctoral education: Are we losing the distinctive 'added value' of the PhD? In Cardoso S., Tavares O., Sin C., Carvalho T. (eds) Structural and institutional transformations in doctoral education: social, political and student expectations, Palgrave Macmillan.

'[The ideal PhD fellow] should be... an excellent researcher, an excellent teacher, know how to integrate their research and their teaching together, be able to work across disciplines... and have... a global perspective. That's a lot to ask... [laughs] so it's a utopia.' (former NSF officer)

From a desire to boost employability beyond academia, 'future-oriented' doctoral programmes are now aiming to achieve many things at the same time: create great researchers, but also great entrepreneurs; create experts able to work across many different disciplines; create the in-depth knowledge of a research degree, and also develop a breadth of generic 'transferable' skills. However, in this chapter, I am arguing that by trying to achieve so much within a very limited time frame, this new kind of PhD risks failing to excel in any of the above; moreover, it risks losing its distinctiveness (i.e. whatever makes it different from other – lower – degrees, or what constitutes the added value that it can bring to society and the labour market). By 'added value' I mean the specialised skills, knowledge and expertise that only a few years of in-depth study can develop. I argue that this 'added value' is worth keeping because society and the labour market need knowledgeable researchers who have benefitted from spending a considerable amount of time focused on their respective area of expertise. By aiming to achieve so many things at the same time, the creators of these programmes often struggle to clearly articulate their goals without depicting a utopia, as in the quote above. Furthermore, due to unclear objectives and/ or ways of achieving them, the programmes are also hard to institutionalise in practice.

The chapter is structured as follows: first, it briefly outlines the background for this study; second, it introduces the ITN and the IGERT – the two main doctoral programmes that the study focuses on; third, it explains the methodological choices and design; fourth, it discusses the two main features of these programmes – interdisciplinarity and cross-sectoral collaborations – as ways of achieving employability; and finally, it suggests possible ways forward.

Background for the study

The last decade has witnessed intensified efforts from national governments, as well as powerful transnational organisations such as the World Bank and the OECD, to frame higher education – and

especially doctoral education – as the key provider of knowledge and human capital for the so-called ‘knowledge economy’. On the backdrop of wider transformations sweeping higher education, doctoral education has received special attention. As the key producer of knowledge, research and human capital for the so-called ‘knowledge economy’, it has become the central focus of policy discussions. As a result, the number of PhD positions increased all over the world (Nerad, 2010; Nerad, Trzyna & Heggelung, 2008) so that more PhD-educated graduates went into industry and thus made the (national/regional) economy more competitive. However, concerns with ‘employability (beyond academia) have led to a much deeper ‘rethinking’ of doctoral education (Nerad, 2011; Borkowski, 2006) to suite a wide range of purposes. It has thus been proposed that the mission of doctoral education today is not just that of forming a community of scholars, but also that of creating an intellectual elite able to function well in a highly globalised economy (Boud & Lee, 2009; Nerad, Trzyna & Heggelund, 2008). It was thought that employability beyond academia could be achieved by working across disciplines and sectors; so, in other words, by focusing on meta–aspects, or skills (such as flexibility and adaptability) rather than developing further content-specific expertise, or, what may be called, ‘specialised’ skills (discipline and sector specific).

As part of their strategies to compete in the so-called ‘global knowledge economy’, nations and transnational organisations have designed doctoral programmes that, in their view, reflect some of these new, 21st century visions. The European Commission (EC) is one such entity that has come up with a doctoral programme called Initial Training Network (ITN), later renamed Innovative Training Network. Similarly, the US government agency called the National Science Foundation (NSF) has designed its own vision of doctoral education, reflected in their flagship programme called Integrative Graduate Education Research Traineeship (IGERT), and to some extent also reflected in its most recent successor, the National Research Traineeship (NRT).

The EU and the US

This study focuses on the above-mentioned PhD programmes: the ITN and the IGERT. They are ‘flagship’ models of doctoral education, which means that, although they are not representative in terms of numbers, they are important because they were set up as examples to be followed more widely, and were offered generous funding from influential (trans)national bodies (the EC and the NSF). For this reason, the chapter does not treat them as ‘alternatives’ to more ‘traditional’ PhD programmes, but as programmes that are meant to ‘lead the way’ in doctoral education and show what ‘future-oriented’ programmes ought to be like. What is special about the ITN and the IGERT is that they both aim to diversify the missions of doctoral education by incorporating broader notions of employability beyond academia.

The Innovative Training Network (ITN)

The ITN was designed as a network of universities and non-academic actors, where institutions across Europe collaborated on an interdisciplinary programme. According to the official website, 'ITNs bring together universities, research centres and companies from different countries worldwide to train a new generation of researchers' (EC ITN official website). The ITN labels itself as 'high quality doctoral-level training in and outside academia' (EC ITN official website), and its description includes keywords such as 'excellence', 'business innovation' and 'entrepreneurship'. What is clear from the website is that the focus on business is undoubtedly at the forefront of the ITN.

Applications to ITNs are open to 'organisations such as universities, research centres or companies that propose a research training network' (EC ITN official website). Geographical mobility was one of its core features, as it required fellows to relocate to a different country when taking up their position. This meant that individuals could only apply to become enrolled at an institution in the network, if this was located in a country where they had not lived for more than 12 months in the last 3 years. Because of its consortium structure, the fellows and supervisors were not all based in one campus, but spread across different countries in Europe.

The Integrative Graduate Education Research Traineeship (IGERT)

The IGERT was designed as an interdisciplinary initiative bringing together researchers from different areas on one site to look at thematic issues from multiple angles. Similarly to the ITN, the IGERT was intended to catalyse a 'cultural change in graduate education' by establishing 'innovative new models for graduate education and training' (IGERT official website). The programme was inspired by the COSEPUP report from 1995 (Committee on Science, Engineering, Medicine, and Public Policy), which was chartered by the Academies to address 'the concerns and requests of the President's Science Advisor, the Director of the National Science Foundation, the Chair of the National Science Board, and heads of other federal research and development departments and agencies, and the Chairs of key science and technology-related committees of the Congress' (National Academies website). In 1998, the IGERT was born as the product of the National Science Foundation (NSF), 'an independent agency created by Congress in 1950 to promote the progress of science, to advance the national health, prosperity, and welfare; [and] to secure the national defence...' (NSF official website).

The IGERT was the product of the NSF in the same way that the ITN was the product of the European Commission. However, there is one significant difference between the two cases. On the one hand, the IGERT was presented as the product of a single agency, the only acknowledged influence being that of

the COSEPUP report (1995). On the other hand, the ITN was presented as the result of collective thinking between various stakeholders, who engaged in active discussions with the European Commission prior to the birth of the ITN. A function that both programme shared, nonetheless, was their role as ‘flagship’ models for doctoral education worldwide and especially in their respective regions.

Methodology/ Research Design

This chapter is part of a larger study conducted throughout 2013-2017, where data was collected from two ITNs and two IGERT programmes, in the form of interviews with PhD Fellows (marked as ‘FEL’ in the table below), and their supervisors (‘SUP’)/ principal investigators (‘PI’). In addition, interviews were conducted with the main organisations that created the programmes (the European Commission and the National Science Foundation), as well as other stakeholders involved in doctoral education policy. Table 1 illustrates the span of the interviews, using pseudonyms and a unique descriptor for each interviewee, which will be used throughout the rest of this chapter.

Table 1. Participants in the study

Region/country	Affiliation	Interviewees
Europe	Policy level	European Commission rep (EC) European Commission former official (former EC) European Students’ Union rep (ESU) European University Association – Council for Doctoral Education rep (EUA-CDE)
	ITN MED	Eva (ITN MED, PI) Oscar (ITN MED SUP) Kristine (ITB MED FEL1) Lauren (ITN MED FEL2) Chris (ITN MED FEL3) Lisa (ITN MED FEL4) Caroline (ITN MED FEL5)
	ITN TECH	Charlotte (ITN TECH ADMIN) Carla (ITN TECH SUP) Lena (ITN TECH FEL1) Monica (ITN TECH FEL2) Anna (ITN TECH FEL3)
United States of America	Policy level	Council of Graduate Schools rep (CGS) National Science Foundation former employee (former NSF) National Science Foundation rep (NSF1) National Science Foundation rep (NSF2) National Science Foundation rep (NSF3)
	IGERT COMP	Nick (IGERT COMP ADMIN) Richard (IGERT COMP SUP1)

		Brian (IGERT COMP SUP 2) Nicolas (IGERT COMP SUP3) Martin (IGERT COMP FEL1) Oliver (IGERT COMP FEL2) Daniel (IGERT COMP FEL3) Maya (IGERT COMP FEL4)
	IGERT ENV	James (IGERT ENV PI) Simon (IGERT ENV SUP) Joana (IGERT ENV FEL1) Emily (IGERT ENV FEL2) Mathew (IGERT ENV FEL3) Penny (IGERT ENV FEL4)

The first ITN programme that I investigated was a collaboration between universities, companies and governmental authorities, with 12 PhD fellows and 2 postdoctoral fellows located across 7 countries. The two sites from which I selected my interviewees from this programmes were a Nordic country and a Western European country. As an indication of the disciplines involved, the thematic focus of the project was at the intersection of Medical and Biological Sciences. This is why, for the purpose of this paper, it is referred to as 'ITN MED'.

The second ITN that I investigated was a collaboration between 9 European research laboratories and 2 companies, spanning 8 countries. The project included 10 PhD fellows and 3 postdoctoral fellows, who were all spread across the 8 different countries. The two sites in this programme from which I recruited my participants were located one in a Nordic and one in a Southern European country. Similarly to the first, the thematic focus of this second ITN was at the intersection of Biology, Health and Technology. To distinguish it from the first ITN, this programme is referred to as 'ITN TECH'.

The reason that both ITNs that I investigated were in a similar field is because life science was also one of the most funded disciplines through the ITN, alongside Engineering (private correspondence with EC official).

In the case of IGERT, I used my academic connections at universities in the US to obtain access to two IGERT programmes that were ongoing at the time of my stay in the US. In addition, I used my 3-month secondment at an American University as my base during the fieldwork period, which involved two trips to two university campuses on the West Coast. The particular organisation and disciplinary makeup of these programmes will be discussed in more detail in the following section, which focuses on the ways in which interdisciplinarity was linked to employability in the IGERT.

The semi-structured interviews were conducted in an open, flexible manner, aiming to understand how individuals made sense of the transformations going on in doctoral education, and more specifically, what they thought of and/ or how they experienced the emblematic features of these two programmes.

For example, open-ended questions were asked about interdisciplinarity, entrepreneurship, and many other programme features, in order to understand what the respondents thought of them. In addition, I also asked broader, more open-ended questions about the perceived purpose/ mission of doctoral education, hoping to understand the extent to which ideas embedded in the programmes matched the respondents' own understandings of what a PhD ought to be about and what it meant to be a doctoral researcher.

The approach used in analysing the data was, therefore, both deductive and inductive. On the one hand, I broadly structured the analysis around the main features of the two programmes, as well as their implications for doctoral education, as perceived and negotiated by different actors. At the same time, within this loose structure, I have allowed themes to emerge from my data, by conducting an inductive thematic analysis of the interview transcripts. Most themes revolved around the purpose of the doctorate, the fellows' motivations to pursue a PhD and, ultimately, the question of 'employability' – within and outside academia. In addition, critical discourse analysis has been used to identify instances of negotiation, acceptance and/ or contestation in relation to transformations occurring in doctoral education. For reasons of anonymity and confidentiality, the chapter does not include the names of the individual programmes and the institutions that housed them. From similar considerations, the names of the respondents have been replaced by pseudonyms.

Rather than aiming to offer an exhaustive account of all the themes that emerged in the interviews, this chapter showcases some of the thoughts that many interviewees have expressed as way of giving a voice to early career researchers, as well as agency, which goes through their perceptions of their own employability. Employability in itself is an interesting concept as it refers not to one's actual job status but the one's imagined capacity to obtain a job (Boden & Nedeveva, 2010); it is a concept that refers to form rather than content, centred around skills.

The following section discusses the findings of the study, organised by programme goals, and including a comparative dimension between the ITN and the IGERT. The main programme goals – interdisciplinarity and cross-sectoral collaborations – are analysed as ways to achieve employability beyond academia.

Employability through interdisciplinarity

One way of achieving employability beyond academia was through interdisciplinary research. Interdisciplinarity was a feature of both the ITN and the IGERT; however, it was institutionalised quite differently in the two programmes. The ITN operationalised interdisciplinarity in a relatively narrow sense; in other words, the disciplines grouped in one programme normally belonged to the same vast

area of inquiry (e.g. Biology and Health). The IGERT projects, on the other hand, employed a much more radical idea of interdisciplinarity, where the thematic focus of one programme would span across vastly different disciplines, such as Anthropology, Computer Science and Engineering. For this reason, this section focuses on the IGERT.

The IGERT

'The broad goals are largely set forward by the NSF... the overarching goals: We wanna train a group of students that are able to work across disciplines... in groups; and that's a means for an end which is to work in places outside of the university.' (Simon, IGERT ENV SUP)

As stated on the IGERT official website, the programme labelled itself as an interdisciplinary initiative that went 'beyond' what disciplinary undertakings could achieve. 'Collaborative research that transcends traditional disciplinary boundaries', announces the website, is 'the future' (IGERT official website). The IGERT programme was designed as an interdisciplinary initiative bringing together scientists from different areas on one site to look at thematic issues from multiple angles. The idea behind it was that each person would be a specialist in their own discipline but work as part of an interdisciplinary team to address the issue at hand. As IGERTs were normally topic-based, rather than discipline-based, fellows were recruited from sometimes vastly different disciplinary backgrounds. The first IGERT that I investigated, for example, combined seven disciplines, ranging from Computer Science and Engineering, to Biology, Geography, and Sociology. This IGERT was based at a relatively prestigious public university in the US; the second IGERT that I investigated was based at a less prestigious public university. The subjects combined in this IGERT included Engineering, Environment, Health, Urban Studies and Sociology. It is also important to add here that a special feature of the IGERT was the fact that it accepted several cohorts of PhD fellows on the same programme, over a longer period of time, as opposed to the ITN, which only included one cohort of fellows, working simultaneously on 3 year PhDs.

Intellectual relocation as detrimental to one's employability/ career path:

Despite the quote above from the NSF, some of the fellows whom I interviewed thought that their interdisciplinary training actually made them less employable. They believed that interdisciplinarity was limiting their opportunities, for both academia and other sectors, and therefore represented a disadvantage on the labour market. This finding also mirrors an academic study done in 2013, which discussed the difficulties of obtaining employment when having an interdisciplinary background (Bridle et al., 2013). Many of my respondents believed that the breadth of their programme did not give them

a deep enough knowledge of any subject in particular, and that made them less competent in almost any given job. It was the specialisation of the PhD, not the generic skills and the breadth that they thought would give them an advantage on the labour market. In the example below, which shows a fellow's perceived prospects for a job in academia, interdisciplinarity was seen as a limitation for pursuing an academic career because, as Mathew (IGERT ENV FEL3) argued, well-established departments generally liked to consider applicants with more experience in their own discipline when hiring. The impediment, here, therefore, was the organisational structure of the university.

'I know that I can't fit in a traditional department somewhere, so I can't apply for... I can't fit into a traditional Sociology department, or Political Science department... because of the interdisciplinarity in my background, I wouldn't be as competitive against a pure Sociologist.'
(Mathew, IGERT ENV FEL3)

McAlpine (2010) has already explored how switching back and forth between disciplines 'requires intellectual relocation [...] that can interrupt or disrupt the intellectual strand of [junior researchers'] identity-trajectories as academics' (as it appears in Enright & Facer, 2016: 3). An interdisciplinary track was also proven to have negative consequences for employment and tenure by Jacobs and Frickel (2009). Oliver (IGERT COMP FEL2), a fellow who wanted to get a job in industry was equally doubtful whether his interdisciplinary background would work to his advantage:

'All that IGERT stuff seems like departing from the traditional Engineering background so it's like... am I gonna have trouble finding a job, after this, doing Engineering [...] If I was gonna just go straight into working for an Engineering firm or something, I would probably want better background of that, but... I think after the fellowship is done I'll probably just go back to Engineering and go deeper in that.' (Oliver, IGERT COMP FEL2)

Employability through cross-sectoral collaborations

As mentioned earlier, the ITN was designed as a collaboration between universities and non-academic partners, in an attempt to design a more 'modern' model of doctoral education, 'subject to multiple accountabilities', as Novotny et al. (2003: 179) would say. Collaborations with non-academic partners were, therefore, designed to add a somewhat contemporary, innovative feel to the so-called 'traditional' doctorate. The collaborators could be partners from industry, NGOs or government organisations, and their role was to participate in the process of research, alongside the universities involved; some of them also hosted fellows at their institutions for secondments.

The collaborations with non-academic partners were set up primarily to enhance the fellows' employability, by expanding the range of skills that would qualify them for a job in industry or other

non-academic sectors. The widespread preoccupation with employability arose from an acknowledgement that the number of academic positions in higher education was significantly lower than the number of doctoral degree holders (Kehm & Teichler, 2016). Furthermore, a so-called 'traditional' PhD education was framed in policy documents to be unsuccessful in preparing fellows for a job outside academia. Following this thread, Nerad (2004) and Kehm (2007) have aptly summarised the critiques of 'traditional' doctoral education, which mainly amount to fellows being trained too narrowly, lacking professional skills, teamwork skills, and, among many others, being ill-informed about employment outside academia.

This preoccupation with employability was, therefore, also a pressing concern among the fellows, who, understandingly, seemed intently preoccupied with their survival in a competitive labour market. Most of them showed an awareness of very limited opportunities available in academia, and subsequently expressed concerns regarding their suitability to occupy jobs in other sectors. As one of the fellows put it, 'I hear a lot of my colleagues, whether they are postdocs or PhDs, thinking – I don't know what my transferable skills are... if I were to shift to industry or government and I only know how to process genetic data [...] would somebody hire me? – And certainly those are relevant concerns' (Lauren, ITN MED FEL2); 'because...', as another fellow put it, 'we all know that we'll finish the PhD and not everybody will continue an academic career' (Caroline, ITN MED FEL5).

Innovation seminars

The focus on employability and the pressures to produce 'employable' graduates prompted universities to introduce courses and seminars to equip students with skills for the business world. This trend was also taken up by an innovation seminar organised at IGERT COMP.

'The idea of the innovation seminar was to see how you can apply your research in real life, or how you could take research outside of a lab, make it useful. But, a lot of the speakers who came to talk were people who basically work in industry and... talked about how to turn specifically Engineering or Computer Science research into a business. Which is not really what I am interested in, so that gives me the impression there seems to be a focus on business. Or even if you are in academia, sort of... how do you still make your research into some kind of business, into some kind of profit.' (Daniel, IGERT COMP FEL3)

The image of the entrepreneur articulated here appears in opposition to Daniel's own idea about his role as an early career researcher and is refuted as something that he was 'not really interested in'. According to the fellows, the organisation of the seminar had been promised in the application to the NSF, at a time when the PI was preoccupied with designing a programme that the NSF would approve of.

However, based on Daniel's account, not all the fellows were interested in transforming their research into products, and in fact many of them felt alienated by it. Maya (IGERT COMP FEL4) was another fellow who openly declared that she had not been interested in this seminar, yet she still had to attend, as she was 'highly encouraged' to do so: 'If you are not interested, it will drive you crazy, you know... Please don't tell me how to start a business again. I am really not that interested' (Maya, IGERT COMP FEL4). Of course, while the IGERT did advertise its promotion of cross-sectoral collaborations, what Maya found was that none of these seminars focused on collaborations with NGOs, government, or any other stakeholders that might have been of interest to the social scientists, beyond private businesses. Daniel (IGERT COMP FEL3) further explained how he was 'turned off' by all the 'focus on money':

'I'm listening to these presentations, I'm hearing these people, and it's great that they took their research and made a company and that they're making lots of money, but it kind of turns me off and makes me think that maybe that's not for me. Maybe that's not what I want to do with my life.' (Daniel, IGERT COMP FEL 3)

Oliver (IGERT COMP FEL2) was another fellow who did not seem interested in business and sounded quite sceptical of the whole set up: 'just a bunch of entrepreneurs who came in and talked about innovation' – is how he described the seminar; a focus on 'Get out there and start a business! Have an idea!' (Oliver, IGERT COMP FEL2). It is interesting to note Oliver's phrasing – 'just' entrepreneurs – which stands in stark contrast with the language used by some policy-makers in my interviews, who talked about academics as 'just' academics. This clearly shows a difference across groups about who is to be held in the highest regard: entrepreneurs or academics. Going back to Oliver's statement, entrepreneurialism and making money seemed to be pushing people away from academia.

The reason that many of the fellows had chosen to be in an academic environment was, for many, precisely because of how different it was from industry – because it was a space where the focus was not on producing money, but on pursuing higher intellectual ideals. The transition to a more marketable training model had ruined that experience for many, who now found academia unappealing because of its business features and the kind of environment that it was creating.

'I think one of the good things the IGERT has done is actually push me to think about... maybe it's time to leave the academy... or distance myself from it a little more, just being exposed to some of these... alliances with businesses and business perspectives... [the academy] is such a competitive environment, it's such a masculine environment, I think it's also for my own personal well-being and how I like to just be with people and in the world... academia might not be the place where I can do that.' (Martin, IGERT COMP FEL1)

This is an interesting perspective suggesting that academia was an attractive place to many precisely because of its difference from industry, and that the increasing marketisation of higher education had taken away that distinctive academic mark.

Focusing on acquiring breadth rather than depth: The case of the IGERT

It is widely assumed that doctoral education is about doing research, yet the COSEPUP report (1995) claims that ‘traditional PhD programmes *overemphasise* research’ (as cited in Graybill et al, 2006: 758; my emphasis), implying that doctoral education should not centrally be concerned with acquiring ‘depth’, but rather – breadth; of course, this means ‘spreading oneself just a little thinner’ and ‘giving less’ (respondents in Gardner et al. study, 2012: 384), which, arguably, may not be the way to achieve ‘breakthrough research’ – also one of the goals of the IGERT.

The idea behind increasing the number of PhDs globally was so that more PhD-educated graduates went into industry and thus made the national economy more competitive. Because academia could not absorb all PhD graduates anymore, the PhD had to be re-shaped to suit industry needs. However, this study suggests that this may have led to a PhD that was trying to achieve too many things at the same time. ‘You know, [the IGERT PhD fellows] need to be broadly trained professionals, not just scientists or engineers’ (NSF2). This quote brings into focus the debate on depth versus breadth and whether it was realistic of anyone to expect a PhD to achieve both. Of course, the NSF argued that ‘the additional training [was] not additional training... it [was] integrated into the programme’ (NSF2), through the way in which the IGERT was designed and structured. However, as it will be shown later, the fellows overwhelmingly thought that the IGERT training did feel like additional training and that it was very hard for them to juggle and negotiate the multiple responsibilities that they had been assigned. One of the most challenging issues was navigating different disciplines at the same time. However, more importantly still, was fulfilling the expectations that they should be both top researches and commercially-minded entrepreneurs; because, despite claims for breadth, ‘in the end, the thing that NSF [was] looking for [was] breakthrough research’ (NSF1). The issue arose from the fact that it was not explained how someone could achieve all these things within the given time frame – and the given structure. As one NSF officer explained:

‘We gave people extra money to help them invite someone to train them in how to think more entrepreneurial. [...] Everything is so competitive now, I don’t see how anyone can survive if they’re not a little more entrepreneurial. [...] Well, I suppose if you’re doing very basic research and you’re brilliant you deserve some time and space.’ (NSF1)

It was not clear, therefore, *where* this kind of ‘blue skies’ research could be done, and the confusion seemed to emerge precisely from the fact that the IGERT was designed as a programme preparing fellows for two very different career paths. Yet, regardless of the career that they ended up pursuing, everyone had to undertake the same IGERT training, with the risk of not being suitably qualified for either of the career paths. This was in fact reflected in some of the interviews with the fellows, who were concerned about their employability for both academia and industry.

Labour market outside academia not ready to fully utilise PhD knowledge and expertise

The employability issue also gave rise to a discussion about the value of a PhD for a non-academic job market. Besides being appreciated as an additional credential, a PhD was also claimed to be largely unnecessary for a non-academic position. One supervisor in particular, expressed strong scepticism:

‘You are in the same place [as someone with a Master’s degree]. Most likely, when you are a Master’s graduate you are younger and more energetic... People look differently when you start at the company. Whereas when you do a PhD, it’s four years later. You are more mature, they expect more from you, you don’t have the same room for mistakes... but you are on the same level, same place. [...] Whereas people who went directly from... when I graduated... they’re directors now. [...] So, that’s just to show, I mean, that’s a difference, right?’ (Oscar, ITN MED SUP)

According to Oscar, unless one had a research position (in any sector), there would be no perceived benefits of working in industry with a PhD – on the contrary. One would be starting at the same place as someone with a Master's degree, only four years later in life. While the policy focus has been on how to make PhD holders 'qualified' to enter a wider labour market, there has been little work done to ensure that industry is prepared to take on PhD holders – prepared to offer them jobs in which they could effectively use their higher level of expertise.

Similar concerns were expressed by fellows:

‘I recently talked to people about Sociology and how you can maybe manage people and how a PhD in Social Sciences can help you in that. But, I kind of wonder, if that is really your end goal job, do you really need six years of a PhD in Sociology or do you only do that if you are really interested in the academic part?’ (Daniel, IGERT COMP FEL3)

Because of the increased focus on entrepreneurship and innovation in the detriment of other (academic) pursuits, the fellows who wanted to pursue a career in teaching felt at a disadvantage. Arguably, a fellow enrolled in a so-called ‘traditional’ PhD programme might also feel at a disadvantage for not having

been offered opportunities outside academia; this was, therefore, also a case of unclear communication of goals and expectations. However, the reality of the programme was that the stress on performativity, which had replaced the ‘professional culture of open intellectual inquiry and debate’ (Olssen & Peters, 2005: 313) had (unintended) implications for teaching (Naidoo, 2003), as some of the fellows explained.

‘For me, the purpose of doctoral studies is generally to do research, to get deeper understanding of the field you are interested in and also partly, depending on why you are getting a PhD, if you are going to work in academia, then also there would be a teaching component to it, developing the skills to transmit information. [...] But coming at Computer Science I see that there is definitely a group of people who put more emphasis not on teaching but rather... yes, being able to do research and then go off into industry, founding companies or whatever. That's what I mean by 'if'. That also leads to very different population at Computer Science, where they probably have people who are really just there to eventually get a job. And they don't really focus on teaching at all.’ (Daniel, IGERT COMP FEL3)

This quote is another example of fellows trying to negotiate and reconcile competing ideas about the doctorate: ideally, the IGERT wanted to prepare fellows for multiple career paths; however, in practice, too big an emphasis on an entrepreneurial path neglected the needs of those who wanted to pursue a career in academia. While this approach seemed to work for some disciplines (as in the example above with the Computer scientists), this was not the case with in the social sciences. What Daniel was explaining is indicative of a wider phenomenon, namely the redefinition of the relationships between academia and industry (Lauder et al., 2012), which is affecting the educational and professional experience they were receiving during a PhD.

Conclusion and possible ways forward

This chapter has explored some of the consequences of the diversification of the goals of doctoral programmes as experienced by fellows enrolled in ITN and IGERT programmes. It argued that by being too ambitious – that is conducting high-level research but also developing fellows’ generic skills fit for a career in industry – these programmes risked failing to accomplish their goals. On the one hand, in my respondents’ perceptions, industry was not well prepared to absorb or did not value these highly qualified individuals, and on the other hand fellows aiming at pursuing an academic career were being diverted from their interests by the focus on entrepreneurship.

In policy terms, the ITN and the IGERT were trying to diversify the career paths of the fellows by giving them the skills – and therefore, the option – to pursue a career in non-academic sectors if needed/desired. In practice, however, this meant that fellows had to spread themselves thin. For this reason,

many of the fellows felt alienated and cheated, arguing that a career in business was not why they had chosen to pursue a PhD; while this could have been presented to them as an option, some argued, it should not have limited the experience of those who wanted to stay in academia. Some of the additional programme commitments were, therefore, distracting to some, indifferent to others, and outright upsetting for many, who had chosen to do a PhD precisely to occupy an alternative space to that created by the world of business.

Arguably, the relative success or failure of this type of programmes is dependent on how well the goals are being communicated, how the programmes are institutionalised and to what extent they are able to attract fellows whose motivations to do a PhD are aligned to the programme goals. Of course, some may argue that programmes like the ITN and the IGERT aim to attract people who have different interests than ‘traditional’ PhD fellows and some of my respondents were perhaps not the right target audience for these kinds of programmes. Yet the ITN and the IGERT were not set up as ‘alternative’ programmes, neither were they designed as ‘professional’ PhDs; they were set up as models to be taken up more widely by ‘mainstream’ doctoral education. Therefore, what this chapter has shown is how it would be problematic if *all* PhD programmes looked like the ITN and the IGERT. Going back to the question posed in the title, the chapter suggests that by diversifying the purposes of the PhD (beyond the scope of professional doctorates), we risk losing its distinctive ‘added value’– that of creating specialised ‘experts’ in a given field, which requires extended intellectual immersion.

Policy recommendations

On the basis of this study, my recommendation would be to manage expectations in regard to different types of doctorates suited to different purposes, and not aim to transform all PhDs into professional doctorates as the only way forward. In order to reap most benefits from what a PhD could offer (to society/ the economy), the doctorate could strengthen its distinctiveness: in-depth knowledge of a specific subject; specific skills. Of course, it also needs to adapt and be responsive to a changing labour market, but the best way for the PhD to contribute is exactly through the characteristics that give its added value. Possible ways forward would be to engage industry in a discussion about how PhD trained individuals could best contribute based on their in-depth expertise; having an academic PhD track and an industry track/ applied PhD for people who wish to have a career in industry; keep objectives of each type of doctorate realistic and explicit so that there is no mismatch of motivations and expectations; create more synergies with NGOs and public sector instead of focusing so much on business/ industry.

References

- Boden, R. & Nedeava, M. (2010) Employing Discourse: Universities and graduate 'employability', *Journal of Education Policy*, 25 (1): 37-54.
- Borkowski, N. A. (2006) 'Changing our Thinking about Assessment at the Doctoral Level,' in Maki, P. L. & Borkowski, N. A. (eds.) *The Assessment of Doctoral Education: Emerging Criteria and New Models for Improving Outcomes*, Virginia: Stylus Publishing.
- Boud, D. & Lee, A. (2009) Framing doctoral education as practice, in Boud, D. & Lee A. (eds.) *Changing Practices of Doctoral Education*, Abington: Routledge.
- Bridle, H., Vrieling, A., Cardillo, M. & Araya, Y. (2013) Preparing for an Interdisciplinary Future: A perspective from early-career researchers, *Futures*, 53, 22-32.
- COSEPUP (1995) *Reshaping the Graduate Education of Scientists and Engineers*, Washington D.C.: National Academy Press.
- Enright, B. & Facer, K. (2016) Developing reflexive identities through collaborative, interdisciplinary and precarious work: the experience of early career researchers, *Globalisation, Societies and Education*.
- Gardner, S. K., Jansujwicz J., Hutchins K., Cline, B. & Levesque V. (2012) Interdisciplinary Doctoral Student Socialisation, *International Journal of Doctoral Studies*, 7, 377-394.
- Graybill, J. K., Dooling, S., Shandas, V., Withey, J., Greve, A. & Simon, G. L. (2006) A Rough Guide to Interdisciplinarity: Graduate Student Perspectives, *BioScience*, 56: 9, 757-763.
- Jacobs, J. A. & Frickel, S. (2009) Interdisciplinarity: A Critical Assessment, *The Annual Review of Sociology*, 35: 43-65.
- Kehm, B. M. (2007) Quo Vadis Doctoral Education? New European Approaches in the Context of Global Changes, *European Journal of Education*, 42: 3, pp. 307-319.
- Kehm, B. M. & Teichler, U. (2016) Doctoral Education and the Labour Market: Policy Questions and Data Needs, in Gokhberg, L., Shmatko, N. & Auriol, L. (eds) *The Science and Technology Labour Force, Science, Technology and Innovation Studies*.
- Lauder, H., Young, M., Daniels, H., Balarin, M. & Lowe, J. (2012) Introduction, in Lauder H., Young M., Daniels H., Balarin M. & Lowe J., *Educating for the Knowledge Economy? Critical Perspectives*, New York: Routledge.

- Naidoo, R. (2003) Repositioning Higher Education as a Global Commodity: Opportunities and Challenges for Future Sociology of Education Work, *British Journal of Sociology*, 24 (2), pp. 249-259.
- Nerad, M. (2011) It takes a global village to develop the next generation of PhDs and postdoctoral fellows, *Acta Academica Supplementum*, 2, 198-216.
- Nerad, M. (2010) Globalisation and the Internationalisation of Graduate Education: a Macro and Micro View, *Canadian Journal of Higher Education*, 40 (1), 1-12.
- Nerad, M., Trzyna, T, Heggelund, M. (2008) Introduction, in Nerad, M. & Heggelund, M. (eds.) *Toward a Global PhD? Forces and Forms in Doctoral Education Worldwide*, Seattle: University of Washington Press.
- Nerad, M. (2004) The PhD in the US: Criticisms, Facts, and Remedies, *Higher Education Policy*, 17 , pp. 183-199.
- Novotny, H. Scott, P. & Gibbons, M. (2003) 'Mode 2' Revisited: The New Production of Knowledge, *Minerva* 41, pp. 171-194.
- Olssen, M. & Peters, M. A. (2005) Neoliberalism, Higher Education and the Knowledge Economy: from the Free Market to Knowledge Capitalism, *Journal of Education Policy*, 20 (3), pp. 313-345.